

ABSTRACT OF THE DISCLOSURE

An improved ϵ -removal method is disclosed that computes for any input weighted automaton A with ϵ -transitions an equivalent weighted automaton B with no ϵ -transitions. The method comprises two main steps. The first step comprises computing for each state "p" of the automaton A its ϵ -closure. The second step in the method comprises modifying the outgoing transitions of each state "p" by removing those labeled with ϵ . The method next comprises adding to the set of transitions leaving the state "p" non- ϵ -transitions leaving each state "q" in the set of states reachable from "p" via a path labeled with ϵ with their weights pre- \otimes -multiplied by the ϵ -distance from state "p" to state "q" in the automaton A. State "p" is a final state if some state "q" within the set of states reachable from "p" via a path labeled with ϵ is final and the final weight $\rho[p] = \bigoplus_{q \in e[p] \cap F} (d[p, q] \otimes \rho[q])$.